THE AGE OF REVOLUTIONS

Lieutenant General Claudia Kennedy

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FOREWORD

The Army operates within a global strategic environment. During the Cold War, the forward deployed Army was focused on countering Soviet and Warsaw Pact aggression. Had the Communist forces attacked, NATO forces would have used air and land power to halt the advancing enemy troops and, then, under the aegis of Airland Battle, gone over to a counteroffensive to roll them back. For all that, this war that never happened would have been bloody and horrible, but it was also clearly defined.

The parameters of warfare now and into the 21st century are much more complex. In the following monograph, Lieutenant General Claudia Kennedy, the Army Deputy Chief of Staff for Intelligence, postulates a future world where challenges to the national security and national interests of the United States will come from many sources. Not only will the armed forces of the United States have to be prepared to counter attacks by nation-states with armed forces equipped with modern weapons, they must also be ready to address challenges across a wide spectrum from urban warlords to narco-terrorists.

Today there is a great deal of talk about focusing on high end threats and relying on one dimension of military power, air power, to halt set-piece attacks by any would-be aggressor. As General Kennedy's monograph indicates, that narrow focus addresses only a small and distinct portion of the possible challenges we will face in the 21st century. Because the evolving operational debates have to be considered within the probable future strategic context, I commend to you *The Age of Revolutions*.

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BIOGRAPHICAL SKETCH OF THE AUTHOR

Lieutenant General CLAUDIA KENNEDY presently serves as the Deputy Chief of Staff for Intelligence, Headquarters, Department of the Army, a position she assumed in May 1997 after serving as Assistant Deputy Chief of Staff for Intelligence since July 1995. Commissioned in 1969, General Kennedy has served in a variety of intelligence assignments in the United States, Korea, and Germany. She earned her B.A. in philosophy from Southwestern University at Memphis and is a graduate of the U.S. Army Command and General Staff College and the U.S. Army War College.

THE AGE OF REVOLUTIONS

A Look Back from the Future.

Historians may well dub the decades surrounding the change from the second millennium to the third millennium as an age of multiple and simultaneous revolutions. Certainly history will record that this was a very unstable period, driven by an accelerating change of pace that many of the time found to be both alarming and exhausting. A survey of the writings of futurists like John L. Petersen, Jeffrey Barnett, Ralph Peters, and Alvin and Heidi Toffler will indicate that those who thought and wrote about the future in the late 1990s were both hopeful and sobered by the range of possible futures.

From the perspective of 2050, students of history will note that some futurists of the late 20th century postulated a world of 2025 divided into three distinct populations. The first of these groups, they thought, the advanced nations, might comprise less than one and a half billion people. The next and largest group, a middle group of nations made up of those where the greatest growth was projected, would have a population of five billion people. The third group, comprised of nations struggling on the brink of disaster, would number about two billion people. These demographic estimates were, even in the ebullient and exciting world of the futurists of the 1990s, notoriously suspect, but they provided a contextual frame of reference for thinking about the human dimensions of what might lay ahead.

It was change that affected each of these groups in profoundly different ways, especially the affluent nations which, in 2025, still includes the United States. While change brought enormous rewards for some, for others it fostered an unbroken string of unmitigated struggles laced with failure and violence. While the drawdowns that followed the Persian Gulf War of 1991 had stabilized by the

turn of the century, and modernization efforts like Army XXI and the Army After Next proceeded apace, the military forces of the United States operated at an exhausting pace through a series of peace enforcement and peace-keeping operations as well as responding to various crises presented by the usual suspects in Southwest Asia and on the Korean Peninsula. One thing became obvious rather early on: the military was going to have to operate at those points where success and failure collided; where the advancing future confronted a longing for the past and where technologies ignited and then fed the most primitive of human emotions.

Back from the Future for a Look Ahead.

With this brief bit of hindsight from what the historian of 2050 might write about the first three decades of the first century of the third millennium, let me posit just four of several possible revolutions from today's perspective, their effects, and where the military of the United States may or may not fit in.

The Information Revolution. Historians will tell you that the harnessing of electricity had profound social, economic, and even political impact on humanity. Some futurists believe that the information revolution will have far greater social, economic, and political impact. Today, for instance, there are 200 million computers. In less than 5 years, by the time the high school graduating class of 1998 departs college, the number of computers in the world may exceed 500 million. Furthermore, computers will be 5,000-10,000 times faster by the year 2025 than they are today. This means the world is going to become increasingly networked with stationary and non-stationary objects netted together in a vast and continuously active net.

Not everyone believes the information systems explosion manifesting itself in inexpensive and universal inter-connectivity will be entirely positive. While technology empowers, it can also destabilize. Information is the most destabilizing factor in the world today. We live in a world

glutted with information, but with a deficit of understanding.

A new socio-political and economic trinity for the 21st century is emerging, consisting of the government, the citizen, and information. Many Americans are already comfortable with this trinity and now are routinely using information to create abundance—if not wealth—while maintaining a remarkable level of social stability. Nevertheless, even in America some citizens feel misplaced. For many of them, traditionally-held beliefs and values have been threatened. Reluctant to "get outside their comfort zones" by adopting new ways of thinking and working, they are being left behind by the network economy. They will inevitably form an economically disadvantaged underclass.

Meanwhile, throughout the world, systems of social organizations are seeking a new equilibrium. While this is an exciting process, it is also one that can be quite chaotic and, occasionally, violent. Uncertainty seems to be a constant in this quest for a new equilibrium.

In the less-competitive, more volatile regions of the world, the negative side of the information revolution is multiplied. In those areas, its positive effects are limited to the elite, while the negative effects proliferate among the majority. Western culture, particularly American culture, born on the wings of television to people in cities and the countryside alike, sometimes provides dazzling glimpses of lifestyles that will prove largely chimerical.

While many complain about the junk information that bombards us, there is an inescapable paradox in the information revolution: it takes information to handle information. Furthermore, the user has to be comfortable with the information. Many nations and cultures will not be able to handle information as easily, freely, and comfortably as we can; and this will not only make them less competitive, it may also incite envy, possibly even hatred, for our abilities and successes.

The Socio-Biological Revolution. The socio-biological revolution we now experience, and which will extend well into the next two decades, involves the societal role of women and the evolution of work.

Since the 1960s, women have made tremendous progress in our society. This is sometimes difficult to remember when the immediate focus is on the latest sexual harassment case or about families under stress. Women have, in fact, been introduced into every aspect of the education system and into a large part of the work force. And while gender equity problems linger, on balance the inclusion of women into the wider aspects of the socio-economic and political arenas has contributed to our national dynamism. Those nations with cultures unable to accommodate the role of women are not likely to benefit fully from the information revolution and are unlikely to reap the rewards of global competition.

The second part of the socio-biological revolution is the evolution of the nature of work. As the trend toward the displacement of manufacturing workers continues, the problems that accompany this transition from the industrial age to the information age will persist. According to some estimates, by 2025 over 95 percent of work in advanced nations will involve some use of information technology in direct or embedded forms. Workers in the 21st century workplace, like the soldiers of the Army After Next, will be dynamically involved with information as they synthesize existing knowledge into new and innovative solutions.

While many of the promises of the value-added efficiencies of information technology have yet to be fully realized, we are being compelled to work in smarter ways. These changing patterns, which tend to favor advanced nations, will start to tear down the structural barriers that have blocked the employment of groups like senior workers and single women with children. This transformation will prove dispiriting to those nations and peoples who rely on

muscle-power and who fail to educate themselves for this new age.

The Efficiency Revolution. The third revolution is the efficiency revolution which is often underestimated and overshadowed by the information revolution. American culture is particularly and peculiarly geared to efficiency. While there are psychological and cultural costs, in general our focus on efficiency has enabled us to generate more wealth for more people in less time than ever before. It is a revolution of small details with huge impacts.

Productivity is the most important factor resulting from efficiency. Over the past half century, our society enabled higher levels of productivity through fuller participation in education and throughout virtually every sector of the work force. As the years passed, the benefits accrued to more and more of our citizens. Through the enablers of techno-efficiency, as the Information Age progresses, the efficiency revolution will widen as more computer chips are embedded in objects. The next stage in the efficiency revolution, as genetics research begins to deliver practical results, will be the bio-effiiency revolution.

The Revolution in Military Affairs. Many experts across a wide range of disciplines have differing points of view concerning the Revolution in Military Affairs (RMA). While they may argue about its technologies, its form and substance, and all the implications thereof, most agree that there have been profound changes not only in the technological realm but also in the area of human behavior. I firmly believe that we must exploit the positive effects of the RMA, but I am also concerned that this RMA could prove to be largely irrelevant.

Today, the United States is the world's preeminent military power. Most analysts predict that no “peer” competitors will arise to challenge us for the next 15-25 years, if then. Russia and China are the only nations that, as of this time, seem potentially able to attain anything like “peer” competitor status by 2020. The reality is that the

United States is likely to remain the world's superpower with all the challenges and responsibilities that entails.

While Russia has a troubling nuclear arsenal, its conventional forces have limited capabilities. China will continue to improve its military capabilities through selective modernization and the exploitation of asymmetrical strategies and may seek to become a regional hegemon in the Western Pacific. For the foreseeable future, the United States will continue to face a very real threat on the Korean Peninsula and continuing crises in Southwest Asia.

While there are a number of threats to U.S. interests and to those of our friends and allies, the armed forces we are building, and the forces we will deploy in the future, will be so powerful that it is highly unlikely that any other power will try to compete with our armed forces on our terms. Additionally, we are not likely to see large-scale aerial contests like the Battle of Britain, nor will there be fleet-on-fleet battles reminiscent of Midway in the near future. Given the kinds of threats and challenges we can forecast, this will be the age of the soldier. But even ground combat is likely to become more an issue of logistics and countering the threat of weapons of mass destruction than of competitive technologies. The edge the United States possesses in traditional forms of warfare is significant, and it will remain so for at least a generation even if we add nothing new to the existing arsenal. The problems that will trouble us—and cost the lives of Americans in uniform—lie elsewhere.

Future Enemies.

No potential enemy is attempting to build an RMA force. Some nations will leverage technology to modernize selectively, but they will do so to enable them to act asymmetrically. The four revolutions I have described, which are inspired and led by the United States, have changed the rules so profoundly that they may backfire on

us. In short, because we have focused on building U.S. Armed Forces to be preeminent in force-on-force combat, we may be surprised by the enemies of the future. These will include warlords, tribal chiefs, drug traffickers, international criminal cartels, terrorists, and cyber-bandits. Additionally, the United States, as the world's leading power, will continue to play a major role in addressing humanitarian emergencies and the very uncivil actors of the world's many civil wars.

While conventional warfare will remain a possibility, especially in Korea and the Persian Gulf, and regional conflicts could be ignited by any number of circumstances, as contemporary revolutions break down traditional structures, and as the effects are exacerbated by growing populations, global urbanization, unprecedented diasporas, cheap transportation, and mass communications, those actors prone to violence will find plenty of opportunities. The violent actors are less likely to be established state authorities initiating sanctioned conflict. Rather they are more likely to be fringe actors like nationalists bent on genocide and fanatics fueled by convictions that do not respond to negotiations. These kinds of actors are consummate opportunists who revel in the possibilities that accompany social, economic, and political disorder. When the end of the Cold War unleashed this era of global destablization, it unmasked hidden hatreds and discontents that, in places like the former Yugoslavia and the southern Caucasus, had been suppressed for nearly half a century.

In this age of inspired revolutions, the United States will continue to confront very basic human problems. While American forces are structured and equipped so that no conventional military force on earth can hope to fight us and win, the primary challenges may come from encounters with those who are ruthless in the asymmetric uses of violence and force.

There is an enduring American predilection toward the use of technology which has served us well in most of our conflicts in this century. But the old shibboleths may not necessarily have future relevance. The future, unclear as it is, requires that we constantly reappraise both our military capabilities and how we employ those capabilities in situations that have not traditionally been in our doctrinal repertoire. How would the United States respond to a massive attack on our computer data bases? Who should respond to conflict driven by ethnic or religious motives that result in genocide? How will we respond to nonstate threats? Where are the trip wires?

As the revolutions described here unfold, human problems will intensify on a global scale. Human problems are not usually susceptible to technological remedies. Rather they demand human efforts driven by our humanity and fueled by compassion and understanding. They also require a determination to find the kinds of solutions that bring peace and harmony.

Given our cultural inclination to look for technological "silver bullets" as quick and easy solutions to complex problems, we must be careful to select appropriate, relevant technologies that can be used when our forces are sent to bring order out of chaos in the mega-cities of the 21st century, or when they are sent into the killing fields of backwater countries broken by ethnic or religious strife.

Because the worldwide trend is toward urbanization, military operations in large urban areas will be increasingly prevalent in the coming century. We are only just beginning to explore these operations conceptually. Our inclination may be to try to avoid cities and their sprawling fringes, but a savvy enemy, especially one whose forces are fighting at a disadvantage, will try to pick the best possible battlefield, one which will put the opponent at a disadvantage.

The fact is, that while the United States and a handful of other countries will prosper over the decades ahead, much of the rest of the world faces the new century with very grim

prospects. Increasing populations and declining opportunities will be exacerbated by states poorly equipped to distribute resources. In some regions of the world, the state-based system is breaking down. When this happens, violence and discontent almost inevitably follow. These things are most likely to happen in parts of the globe least able to contend with the effects of political and social disintegration.

Future War.

Indeed, the age of revolutions has produced an abundance of contradictions. Tribal warriors may go into battle with cell phones while terrorists use computers to wreak havoc on their targeted victims. Countries, which a generation ago struggled to obtain and employ World-War II vintage weapons, will possess weapons of mass destruction and so will many terrorist groups. Potential enemies will take shapes we cannot always anticipate. Nevertheless, now is the time to anticipate the scope and intensity of 21st century conflict. What follows are several vignettes based on the revolutions described in the last few pages. As each vignette unfolds, think about the nature of the future U.S. military force that would have to respond to these situations.

Vignette One. In a 21st century mega-city, the capital of a country in the developing world, civil control completely breaks down. The country itself, although rich in resources, is a failed state in which warring factions struggle to control the sprawling capital. In this modern urban apocalypse, there are up to twenty million extras, including the city's former citizens and the millions of refugees from the countryside who have joined their urban counterparts cowering in the rubble over which the doped-up thugs fight viciously in the interests of competing warlords. Amid the squalor, virulent pathogenic outbreak adds to the collective misery as it ravishes the population.

The competing warlords are themselves astute and resourceful individuals. While they lack high-end military technology and sophisticated organizational structures, they have easy access to human source intelligence, know their environment, and are politically savvy enough to play off one international diplomatic position against another to attain their own ends. Their primary commodity is people, a resource they spend freely. The warlords communicate with their gunmen through trusted agents who use tribal dialects unfamiliar to the interpreters who listen for voice intercepts in orbiting aircraft. Their ruthless use of the local population as human shields is evidenced by the widespread carnage. Throughout the city, in shattered hotels and blasted warehouses, thousands of foreign hostages are held while international business suffers. Abroad, among the global diaspora, individuals representing the warlords disseminate disinformation and protest loudly for the right of their people to settle their problems free of outside intervention. Others engage in acts of terrorism designed to make the point that any interference with their particular faction will be to sow a wind from which they will inevitably reap a whirlwind.

Vignette Two. From before the turn of the 21st century, a small state blessed with vital resources has sent hundreds of its young people to the finest colleges and universities in the United States and Europe. There, many of these students studied computer science, most of them attaining advanced degrees. Others mastered the intricacies of a prosperous economy, while still others identified institutional and social vulnerabilities. For any number of reasons, this state and the United States develop significant differences over a range of political and economic issues. This state's leaders proclaim their determination to resolve these issues peacefully. They point to their relatively puny armed forces to make the point that “with this tiny army and small air force, it would be foolish of us to challenge a great power like the United States.” They offer major American television networks access to their schools,

religious shrines, hospitals, and business communities where well-coached citizens deliver the same message: the policies of the United States are making our lives increasingly more difficult.

Meanwhile, as this public information program develops, their analysts and computer specialists exploit recently purchased "accesses" to the most important information nets within the United States and overseas. At first, the intrusions are hardly perceptible, but they increase over time. By the time their effects have a demonstrated lethality, disrupting the lives of Americans in ways too numerous to count, the cost to our nation has soared. Data disappears, banking networks are in chaos, communications fail, and then the transportation system collapses. In the Midwest, grain cannot get to the feedlots outside Omaha and Chicago, so cattle, hogs, chickens, and sheep perish by the millions. Food distribution breaks down. Computers tracking the trucking industry fail, as does fuel distribution; commerce ends. Inevitably, the economy grinds to a halt. By the time the United States figures out what has happened, hundreds of thousands of Americans have died. A debate emerges in Washington over whether or not this "non-lethal" attack warrants a military response of "the gravest magnitude." How does the United States respond?

Vignette Three. For two decades after having his force decimated by a potent coalition of nations, a would-be regional hegemon slowly rebuilt his military by purchasing industrial age military equipment from the former Soviet Union and the arsenals of other European powers anxious to sell off older equipment as they downsized and modernized. In 2020, this army, the preeminent force in the region, easily occupies a neighboring state.

The United States has to put together an intervention force to defeat a well-entrenched force consisting of a mix of combined arms ground forces and limited air and naval forces. Each component has some advanced systems, and

there is a sizable arsenal of mobile intermediate range ballistic missiles that can carry a range of weapons of mass destruction to include chemical, biological, and nuclear warheads.

As U.S. forces converge on the area, the enemy leadership responds asymmetrically. Hostages are held prisoner in and around important facilities. Jammers deployed with mobile systems help to disrupt American targeting systems. Its armored forces move into the occupied city, while the enemy propaganda machine makes much of the cultural and historical sites that would be destroyed by an American aerial attack. Before American forces can occupy ports and airfields in nearby friendly countries, missiles whose warheads contain virulent strains of anthrax are fired into these facilities, making them unusable. The enemy leaders then indicate that they will destroy the contested territory rather than lose it.

Vignette Four. A peer competitor does, indeed, arise by 2020. It does not compare favorably with the United States in every category, but then no two peer competitors have ever been equal in all areas. For instance, during the Cold War, the United States had a preponderance of political and economic power, while the Soviet Union relied on its military resources. The peer competitor of 2020 has a limited conventional power projection force, but its strategic systems place the United States at risk. It also has some capability for information warfare. More importantly, this peer competitor has deployed a working anti-ballistic missile system: its own version of "star wars" largely developed from American work done in the 1980s and early 1990s.

As 2020 unfolds, this "peer" competitor moves with apparent disregard for the interests of the United States, particularly within its perceived sphere of influence. It does so confident that, within its region, it could place any military issue between itself and the United States in doubt, and that, ultimately, it has the ability to raise the ante to an

unacceptable level. The United States is faced with a risky and potentially costly conventional war in an area where its opponent will have significant advantages. Furthermore, it cannot go in under the cover a nuclear umbrella since this enemy has a ballistic missile defense and can muster enough nuclear tipped missiles to incinerate an entire coastal area of the continental United States. What could we do?

Measure your concepts of our future force structure against these plausible vignettes. How did they measure up? Certainly there could be other scenarios, other vignettes, and in the intelligence community, we examine a broad range. But as we develop our capabilities-based forces, we have to examine those capabilities against an unprecedented range of contingencies.

As the United States prepares its military forces for the 21st century, we have to see the world as it is likely to be, not as we would want it to be. As we shape our forces, we must shape them for real challenges, not idealized ones. Above all, we have to ensure that our military forces are matched to the mission, and that their technologies are relevant. The future will demand powerful assessments and then reassessments. We will not get it perfectly right, but if we are wise, and we look judiciously to history as a way of approaching the future, we can get it mostly right. Perhaps most importantly, we must remember that warfare is first and foremost a human endeavor. For the foreseeable future, men and women will be part of the employment of our weapons. Finally, the United States has to maintain a versatile and responsive force.

As in the past, there are those who maintain that one service has the best remedy for future conflicts; one which allows the United States to stand off and punish potential opponents with impunity while risking very little. This promise has not materialized in the past, and it will prove false in the future as well. Keep in mind that a future opponent would have to be stupid not to study the lessons of

DESERT STORM. How viable is the concept of a precision strike in a hostage environment? Can we be sure that dispersion will not, indeed, be a viable remedy for precision? What if, like North Vietnam, the enemy is simply willing to endure more pain than we are willing to inflict?

Balance and flexibility are fundamental to our future defense posture. Flexibility issues from well-structured human organizations wielding appropriate technologies. Each new technological advance should generate a series of tough questions. We will have to develop new organizational forms to take full advantage of information age capabilities. We must guard against developing those systems that will be so prohibitively expensive that they paralyze operational capabilities or that have such narrow uses that we are compelled to fit our strategies to the system's capabilities.

A Rare Moment in History.

The world is ready to enter a new millennium, and the United States is poised on the brink of a rare moment in history. This nation will enter the 21st century as the world's only superpower. Our economic strength, the enduring power of our democratic ideals, and our military power are extraordinary. But to those to whom much is given, much is also required.

We have a strategic opportunity now, as the 20th century is concluding, to prepare our forces under conditions of greatly reduced risk, at least from any potentially overarching threat. But the very complexity of the destabilized world in which we live is sure to generate continuing challenges. At the moment, and for the foreseeable future, our technological advantage is secure. We are ready now for a wide variety of contingencies and we will continue to build our powerful joint capabilities so that we can deal with the most dangerous possibilities.

But the reality is that we are most likely to face forms of conflict that are unconventional and asymmetrical. These will be unpredictable, complicated, at times extremely violent, and inextricably bound to socio-economic issues. As we modernize our weapons, we must be sure that our human capital is sufficiently prepared to deal with difficult and unpredictable situations. While the United States will continue to need all of its military services, the next several decades will be the soldiers' era.

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